

CLAIMS

I claim:

1. An apparatus for the interstitial coagulation of tissues, comprising a three-dimensional body that can be expanded to various states of expansion, and at least one electrode
5 adapted to conduct an HF coagulation current into said tissue, the electrode forming at least a part of said three-dimensional body such that by one of continuous and stepwise expansion of said body said electrode can be kept in constant electrical contact with the tissue during coagulation.

2. The apparatus according to Claim 1, wherein a control device is provided for controlling the degree of expansion of the body dependent on said coagulation current.

10 3. The apparatus according to Claim 2, wherein said control device is adapted to enable an adjustment of a current density of said coagulation current between said electrode and said tissue.

4. The apparatus according to Claim 3, wherein said control device permits the current density to be adjusted independently of the degree of expansion.

15 5. The apparatus according to Claim 1, wherein measurement devices are provided for detecting the state of expansion of said three-dimensional body.

6. The apparatus according to Claim 1, wherein said electrode comprises a treatment electrode that is at least partially permeable to liquid and that can be brought into contact with a section of said tissue, and comprising a liquid-supply device through which an electrically conductive liquid can be delivered to said treatment electrode, and a current supply device adapted
20 to deliver said HF coagulation current to said treatment electrode in such a way that said HF treatment current is conducted to the liquid that is passing through the treatment electrode.

7. The apparatus according to Claim 6, wherein said treatment electrode comprises one of an elastically stretchable and an unfoldable surface element that defines an interior space to which an internal pressure can be applied to expand said surface element by increasing the internal
25 pressure.

8. The apparatus according to Claim 7, wherein said surface element is in the form of one of a ring and a sphere.

9. The apparatus according to Claim 6, wherein said treatment electrode is constructed in the form of a balloon catheter.

10. The apparatus according to Claims 7, wherein said interior space is adapted to be filled with said electrically conductive liquid.

11. The apparatus according to Claim 6, wherein said electrically conductive liquid comprises one of polyvinyl pyrrolidone (PVP), a surfactant and a similar means of changing the 5 viscosity of said electrically conductive liquid.

12. The apparatus according to Claim 6, wherein said treatment electrode is made of a thermally stable material in the form of one of a film, a felt and a woven fabric.

13. The apparatus according to Claim 7, wherein said interior space is enclosed by an expandable auxiliary body that is hydraulically separated from said electrically conductive liquid, 10 and said surface element is constructed in several layers such that in an inner layer liquid can be conducted in a direction towards an outer surface of the element and in an outer layer liquid can be conducted in a direction perpendicular to the surface direction.

14. The apparatus according to Claim 6, wherein a suction device is provided to suck away liquid.

15 15. The apparatus according to Claim 1, wherein said electrode is adapted to be supplied with a cutting current.

16. The apparatus as claimed in Claim 12, wherein said thermally stable material is comprised of tetrafluoroethylene.

20 17. The apparatus as claimed in Claim 13, wherein a partition layer with a greater resistance to liquid flow than said inner layer is disposed between said inner layer and said outer layer.